

## **REMARKS / ARGUMENTS**

### **I. General Remarks and Disposition of the Claims**

Please consider the application in view of the following remarks. Applicants thank the Examiner for careful consideration of this application including the references that Applicants have submitted in this case and, pursuant to MANUAL OF PATENT EXAMINING PROCEDURE § 609.02, all references submitted in the patent applications to which this application claims priority under 35 U.S.C. §120.

At the time of the Final Office Action, claims 42-61 were pending in this application and all claims were rejected. Applicants respectfully request reconsideration in light of the remarks contained herein.

### **II. Remarks Regarding Rejections Under 35 U.S.C. § 103(a)**

#### **A. Claims 42-48 and 55-60 over *Nguyen* in view of *Lee* and *Still***

Claims 42-48 and 55-60 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,209,643 to Nguyen *et al.* (hereinafter “*Nguyen*”) in view of U.S. Patent No. 6,817,414 to Lee *et al.* (hereinafter “*Lee*”) and U.S. Patent No. 7,166,560 to Still *et al.* (hereinafter “*Still*”). Applicants respectfully disagree. In order for a reference or combination of references to form the basis for a rejection under § 103(a), a *prima facie* case of obviousness must be established. Obviousness is determined by construing the scope of the prior art, identifying the differences between the claims and the prior art, determining the level of skill in the pertinent art at the time of the invention, and considering objective evidence present in the application indicating obviousness or nonobviousness. *Graham v. John Deere*, 383 U.S. 1, 17 (1966). The United States Supreme court has identified a number of rationales under which a *prima facie* case of obviousness may be established. See *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 1731 (2007). Each rationale is directed towards identifying known elements in the prior art. See MPEP § 2143. Applicants respectfully submit that due to the differences between the claims as currently amended and the cited references, the Examiner has not established a *prima facie* case of obviousness, in that the combination of *Nguyen*, *Lee*, and *Still* does not establish that each limitation of the present claims was known in the prior art.

i. The References Do Not Disclose the Claimed Coating Solutions that are Coated On-The-Fly

None of *Nguyen*, *Lee*, or *Still* disclose the following element in claim 42: “combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution” that can be coated onto particulates “on-the-fly.” And, with respect to claim 55, none of *Nguyen*, *Lee*, or *Still* disclose the following element: “combining an acid-releasing degradable material with a plasticizer to create a coating solution, with the proviso that the plasticizer does not comprise a starch” that can be coated onto particulates “on-the-fly.”

As Applicants understand from the Advisory Action dated August 20, 2010, the Examiner is citing *Lee* and *Still* as evidence that acid-producing materials are known in the art and is citing *Nguyen* for the proposition that “treatment chemicals” can be combined with solvents under the theory that the tackifying compound in *Nguyen* “is the equivalent of the acid-releasing degradable material of the present application.” And that, since *Nguyen* discloses that a liquid or solution of a tackifying compound can contain a solvent it therefore reads on the pending claims. See Advisory Action at 2. Applicants assert that such an approach vitiates the elements of the pending claims.

*Still* discloses the use of acid-generating materials, such as PLA and PGA, for use in acid fracturing but is clear that only “solid acid-precursor” materials are suitable for the invention. See e.g. *Still* at Abstract, col. 3, ll. 25-37, and col. 6, ll. 9-12 (reciting the various suitable solid shapes for the disclosed “solid acid precursors”). Thus, at no point does *Still* disclose “combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution.” *Still* does not mention the use of a solvent in coating the sand, and does not mention the use of degradable materials in any form other than solid; thus *Still* does not teach the elements relating to mixing with a solvent or plasticizer or the element of on-the-fly coating as required by all pending claims.

Moreover, each of the pending claims includes an element of “on-the-fly” coating of an acid-releasing degradable material onto particulates. *Lee* discloses gravel particulates coated with polymers that degrade to produce acids, such as PLA and PGA. See *Lee* at col. 3, ll. 3-6. However, *Lee* teaches that in order to produce such coated gravel, one of two methods is used: (1) polymerize acid monomer in the presence of gravel at elevated temperature, followed by cooling, grinding, and sieving,

or (2) polymerize acid monomer at elevated temperature and then stir in gravel while maintaining the elevated temperature, followed by cooling, grinding, and sieving. Neither of these methods is equivalent to the on-the-fly coating methods claimed in the present invention. Thus, *Lee* does not mention the use of a solvent in coating the sand and so does not teach the elements relating to mixing with a solvent or plasticizer or the element of on-the-fly coating as required by all pending claims.

The Office Action then cites to *Nguyen* as evidence that because a liquid or solution of tackifying compound can contain a solvent, and that the claimed "treatment chemical" (acid-releasing degradable material) can be introduced in a similar manner. Final Office Action at 3. However, this is unrelated to the present case wherein a solid degradable material is made coatable through the use of a solvent or plasticizer. *Nguyen* is clear that the tackifiers are naturally liquid at down hole conditions and the only time they "may be solid" is at surface conditions. That is, *Nguyen* contemplates the potential use of a solvent in order to achieve a liquid state that is the natural state of the tackifier once placed down hole. By contrast, the present invention contemplates using a solvent or plasticizer to render a material that would otherwise be solid, even down hole, into a coatable form. The Applicants herein discovered that they could create such a coatable material that would continue to act as an acid-producer down hole even though it had already been rendered coatable. Thus, is it impermissible hindsight to combine the acid-releasing materials described in *Lee* and *Still* with the liquefied tackifying solutions of *Nguyen*. These references, taken together, do not disclose "combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution" and then coating that solution "on-the-fly" as required by independent claim 42, or "combining an acid-releasing degradable material with a plasticizer to create a coating solution" and then coating that solution "on-the-fly" as required by independent claim 55. Thus, *Nguyen*, *Lee*, and *Still* cannot form a *prima facie* case of obviousness with respect to claims 42 or 55. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

*ii. Additional Rejections of Claims 48 and 55*

With respect to dependent claim 48, the Examiner alleges that the limitation is optional. Applicants respectfully disagree. Specifically, the limitation is not optional

because claim 48 requires the acid-releasing degradable material to comprise a poly(orthoester). While the acid-releasing degradable material must comprise at least one of the materials listed in the Markush group of claim 42, the additional limitation introduced in claim 48 requires that the acid-releasing degradable material comprise a specific material—namely a poly(orthoester)—even if other materials are present. Thus, Applicants request that the limitation be given the proper patentable weight during prosecution.

With respect to claim 55, the Examiner states that the disclosure of either solid acid-precursors that are liquid at wellbore temperatures or “soluble liquid additives” in *Still* teach the limitation of a plasticizer in claim 55. Applicants submit that nothing in *Still* teaches that these compositions would act as plasticizers. For the solid acid-precursors, the ability to plasticize the acid-releasing degradable material, if possible, would only function above the melting point of the cited materials, which the Examiner states would occur at wellbore temperatures. Applicants note that not all wellbores are above the stated melting temperatures. Further, the particulates can be coated prior to being placed in the subterranean formation and may not be above the temperatures indicated in the Office Action at the time the coating takes place. For the soluble liquid additives, there is nothing to indicate that any of these components would act as plasticizers. The fact that some of these compounds “may” act as plasticizers in some situations—an assertion the Applicants dispute—is not sufficient to establish the inherency of that characteristic.” See MPEP §2112. The MPEP instead requires “a basis in fact and/or technical reasoning . . . that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” *Id.* To the extent that the Examiner is relying on information within the Examiner’s personal knowledge, Applicants again request that the Examiner cite a reference as documentary evidence in support of the position that the listed compounds would make polymers in a fracturing fluid more flowable or provide an affidavit to the same effect in accordance with MPEP § 2144.03 and 37 C.F.R. 1.104(d)(2).

Applicants note that the Examiner has specifically listed claims 52, 53, and 54 in the rejection but has not indicated that these claims are rejected over the combination of *Nguyen*, *Lee*, and *Still*. See Final Office Action at 2 (stating that ‘Claims 42-48 and 55-

60 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nguyen et al.* (US 6,209,643) in view of *Lee et al.* (US 6,817,414) and *Still et al.* (US 7166560)' and thus excluding claims 49-54 from the rejection). Applicants respectfully request that these claims either be indicated as being rejected over these references or that the reference to any of claims 49-54 be removed from the rejection over *Nguyen* in view of *Lee* and *Still*.

Therefore, Applicants submit that claims 42-48 and 55-60 are not obviated by the combination of *Nguyen*, *Lee*, and *Still*. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

**B. Claims 42-48 and 55-60 over *Nguyen*, *Lee*, *Still*, and *Murphey***

Claims 42-48 and 55-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nguyen* in view of *Lee* and *Still*, and further in view of U.S. Patent No. 4,829,100 to *Murphey et al.* (hereinafter "*Murphey*").

As discussed above in Section II.A., the combination of *Nguyen*, *Lee*, and *Still* fails to establish that every limitation of independent claims 42 and 55 was known in the prior art. *Murphey* fails to render obvious the deficiencies of *Nguyen*, *Lee*, and *Still*. Rather, the Examiner merely relied on *Murphey* for its alleged teaching that "particulate material utilized in the performance of packing procedures or as a proppant material in fracturing treatments can be coated rapidly and continuously by admixing in a stream (on-the-fly) . . . instead of batch mixing which requires a period of time..." See Office Action at 9-10. Claims 43-48 and 56-60 depend, either directly or indirectly, from claims 42 and 55 and therefore include all the limitations of those independent claims, respectively, including limitations directed to combining an acid-releasing degradable material with an solvent/plasticizer. Thus, claims 42-48 and 55-60 are patentable over the combination of *Nguyen*, *Lee*, *Still*, and *Murphey*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

**C. Claims 42-48 and 55-59 over *Nguyen, Lee, Still, and McDougall***

Claims 42-48 and 55-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nguyen* in view of *Lee* and *Still*, and further in view of U.S. Patent No. 5,192,615 to *McDougall et al.* (hereinafter "*McDougall*").

As discussed above in Section II.A., the combination of *Nguyen*, *Lee*, and *Still* fails to establish that every limitation of independent claims 42 and 55 was known in the prior art. *McDougall* fails to render obvious the deficiencies of *Nguyen*, *Lee*, and *Still*. Rather, the Examiner merely relied on *McDougall* for its alleged teaching that "generally a fracturing fluid comprises a viscous or gelled polymeric solution, a propping agent, a chemical breaker and other additives commonly used in fracturing fluid . . . , friction-reducing agents such as small amounts of high molecular weight linear polymers such as polyacrylamide . . . ." Office Action at 10. Applicants note that the Examiner appears to be indicating that simply combining any of the components of *McDougall* with a fluid used in a fracturing operation would meet the limitations of the claims. However, the claims are specific as to what components are combined and cannot therefore be taught by simple additives in a fluid, where they may or may not combine with any of the other components. Claims 43-48 and 56-60 depend, either directly or indirectly, from claims 42 and 55 and therefore include all the limitations of those independent claims, respectively. Thus, claims 42-48 and 55-60 are patentable over the combination of *Nguyen*, *Lee*, *Still*, and *McDougall*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

**D. Claims 42-61 over *Nguyen, Lee, and further in view of Mikos***

Claims 42-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nguyen* in view of *Lee* and *Still*, and further in view of PCT Publication No. WO 9425079A1 to *Mikos et al.* (hereinafter "*Mikos*"). For convenience, instead of WO 9425079A1, the Examiner refers to US 6,689,608 of the same patent family.

As discussed above in Section II.A., the combination of *Nguyen*, *Lee*, and *Still* fails to establish that every limitation of independent claims 42, 49, and 55 was known in the prior art. *Mikos* fails to render obvious the deficiencies of *Nguyen*, *Lee*, and *Still*. Rather, the Examiner merely relied on *Mikos* for its alleged teaching that "a synthetic

polymer which degrades in a controlled manner by hydrolysis include polyglycolic acid, polylactic acid, polyorthoester, polyanhydride, or copolymers thereof." See Office Action at 11. Applicants note that *Mikos* is directed towards medical applications. See *Mikos* Abstract. Thus, it is not surprising that *Mikos* does not disclose at least "combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution" as required by independent claims 42 or 49, or "combining an acid-releasing degradable material with a plasticizer to create a coating solution" as required by independent claim 55.

Claims 43-48, 50-54, and 56-61 depend, either directly or indirectly, from claims 42, 49, and 55 and therefore include all the limitations of those independent claims, respectively. Thus, claims 42-61 are patentable over the combination of *Nguyen*, *Lee*, *Still*, and *Mikos*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 42-61.

### **III. No Waiver**

All of Applicants' arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the cited references. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicants do not acquiesce to the Examiner's additional statements, such as, for example, any statements relating to what would be obvious to a person of ordinary skill in the art.

### **SUMMARY**

In light of the above amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections. Applicants further submit that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicant hereby petitions for a Request for Continued Examination (RCE) and authorizes via the Office's electronic filing system the Commissioner to debit the Deposit Account of McDermott Will & Emery, Deposit Account No. 500417, Order Number 086108.0180, in the amount of \$810.00 under 37 C.F.R. 1.17(e) for the Request for Continued Examination fee. Applicant believes that no other fees are due in association with the filing of this response. Should the Commissioner deem that any fees are due, including any fees for extensions of time, Applicant respectfully requests that the Commissioner accept this as a Petition Therefore, and direct that any additional fees be charged to McDermott Will & Emery's Deposit Account No. 500417, Order Number 086108-0180.

Respectfully submitted,

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